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WHALES

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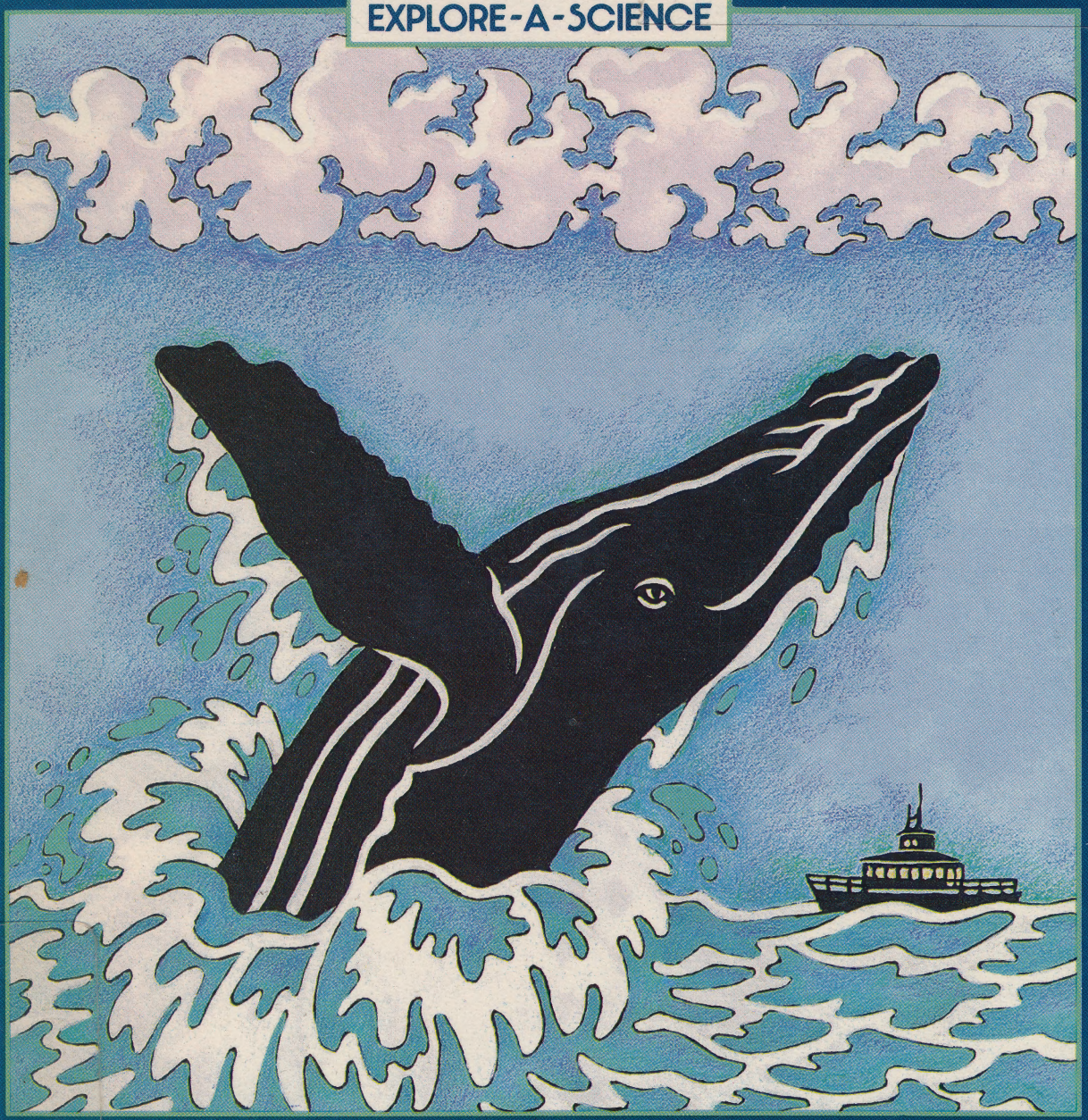

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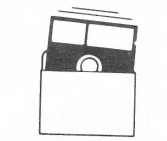

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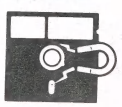

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WHALES

SIDE 1: Scenes **SIDE 2: Activities**

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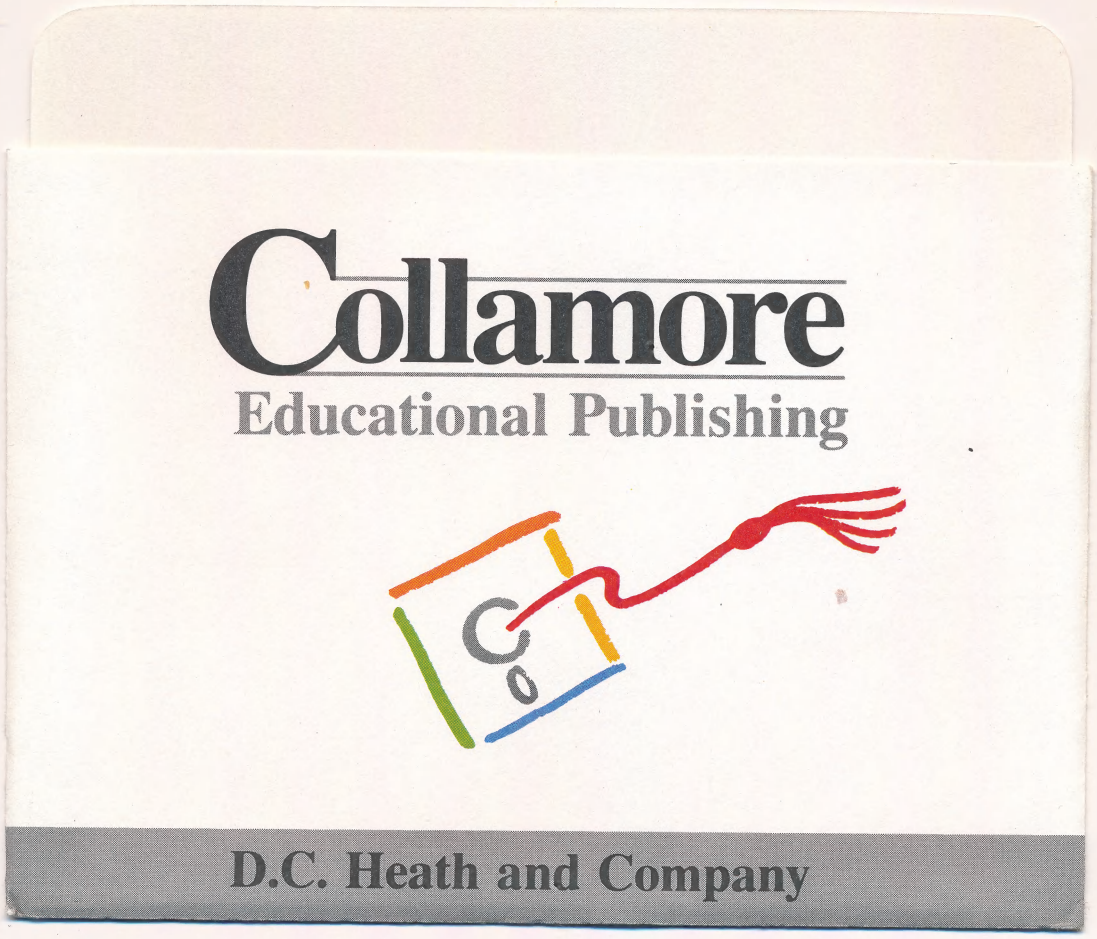
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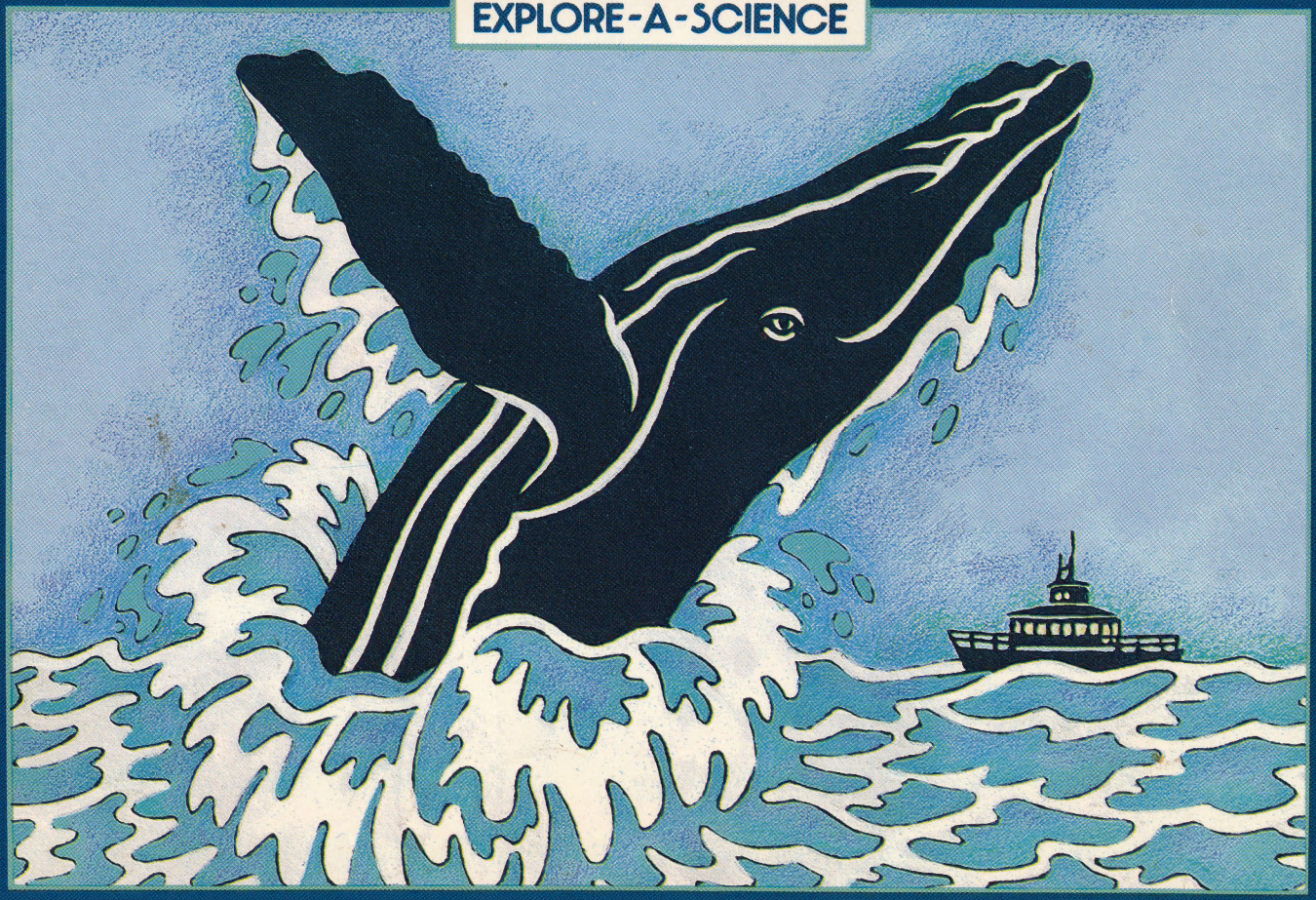

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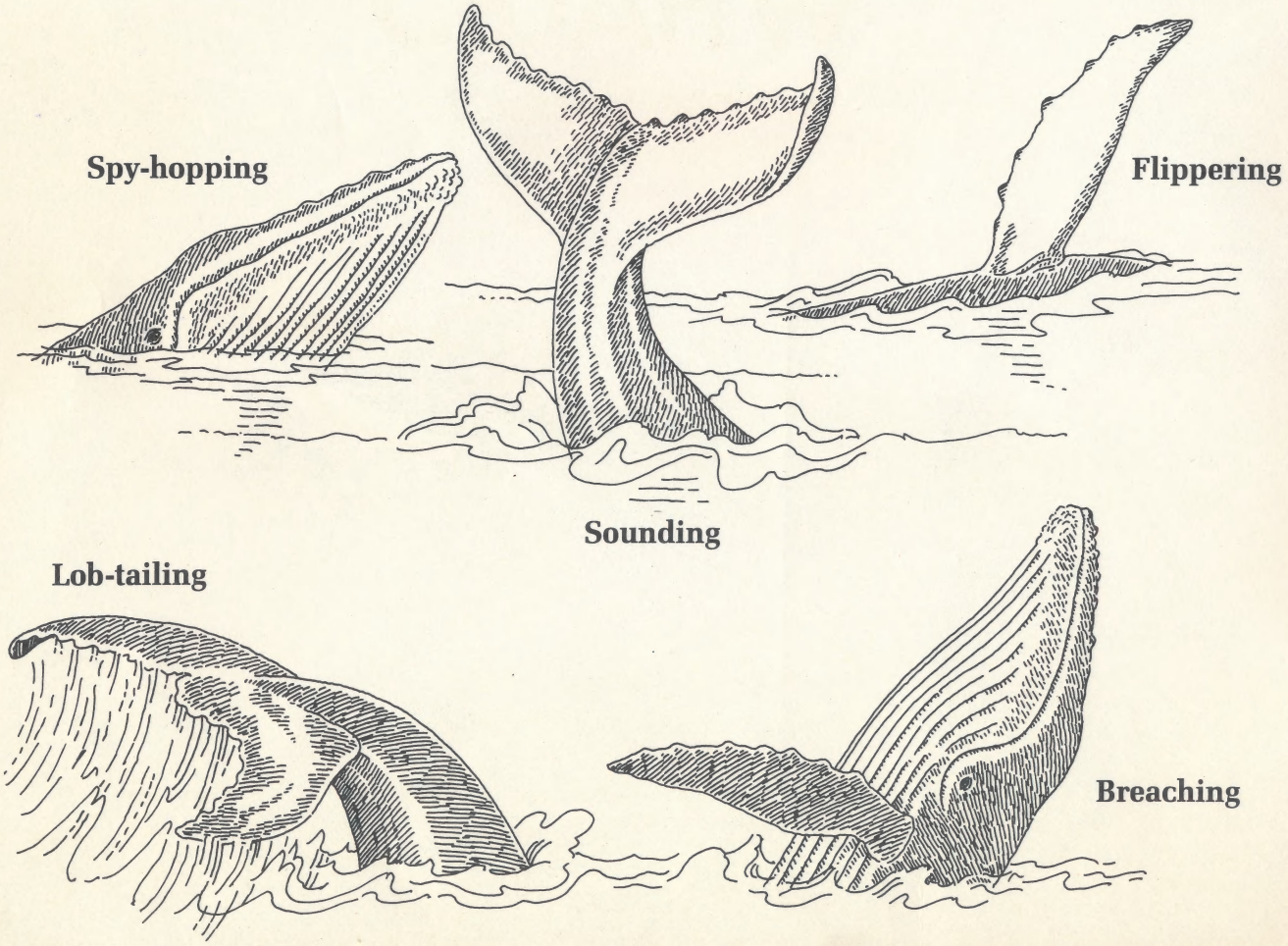
Humpback Whales in the Water



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ANIMAL WATCH

WHALES

EXPLORE-A-SCIENCE

Written by Hannah Bloch
Illustrated by Angela Faeth

The art appearing in this book was generated by the Explore-a-Science Software.

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PALOS VERDES PENINSULA UNIFIED SCHOOL DISTRICT

Programmed by Rob Shaver and Peter Andrews

The Explore-a-Science series was developed by Learningways, Inc. in conjunction with the Boston Museum of Science.

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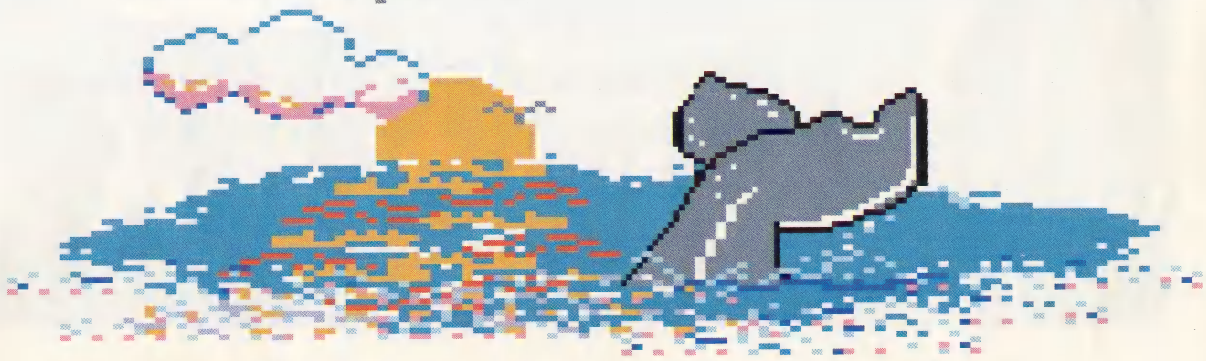
1 2 3 4 5 6 7 8 9 0

Have you ever seen a whale? I have! I saw some with my friend Emily. Emily studies plants and animals that live in the ocean. She's called a marine biologist. Emily taught me all about whales.

There are many kinds of whales in the ocean. Some are small, like dolphins. Some are big, like humpbacks. A humpback can be almost 50 feet long. That's longer than a school bus! Some whales are even bigger. A blue whale can grow to be 100 feet long. Scientists think it's the biggest animal that ever lived!

Go to Scene 1

Most whales are much bigger than people. Pick up Emily and move her around the humpback. How many Emilys fit side-to-side? How else are whales different from people?



A whale has two flippers to turn with, and a fin on its back to help it swim straight. The end of its tail is made up of two flat parts called flukes. Large, strong muscles in its tail push the flukes against the water. This is how the whale moves. Underneath the whale's skin is a thick layer of fat, called blubber. Blubber keeps the whale warm in cold water.

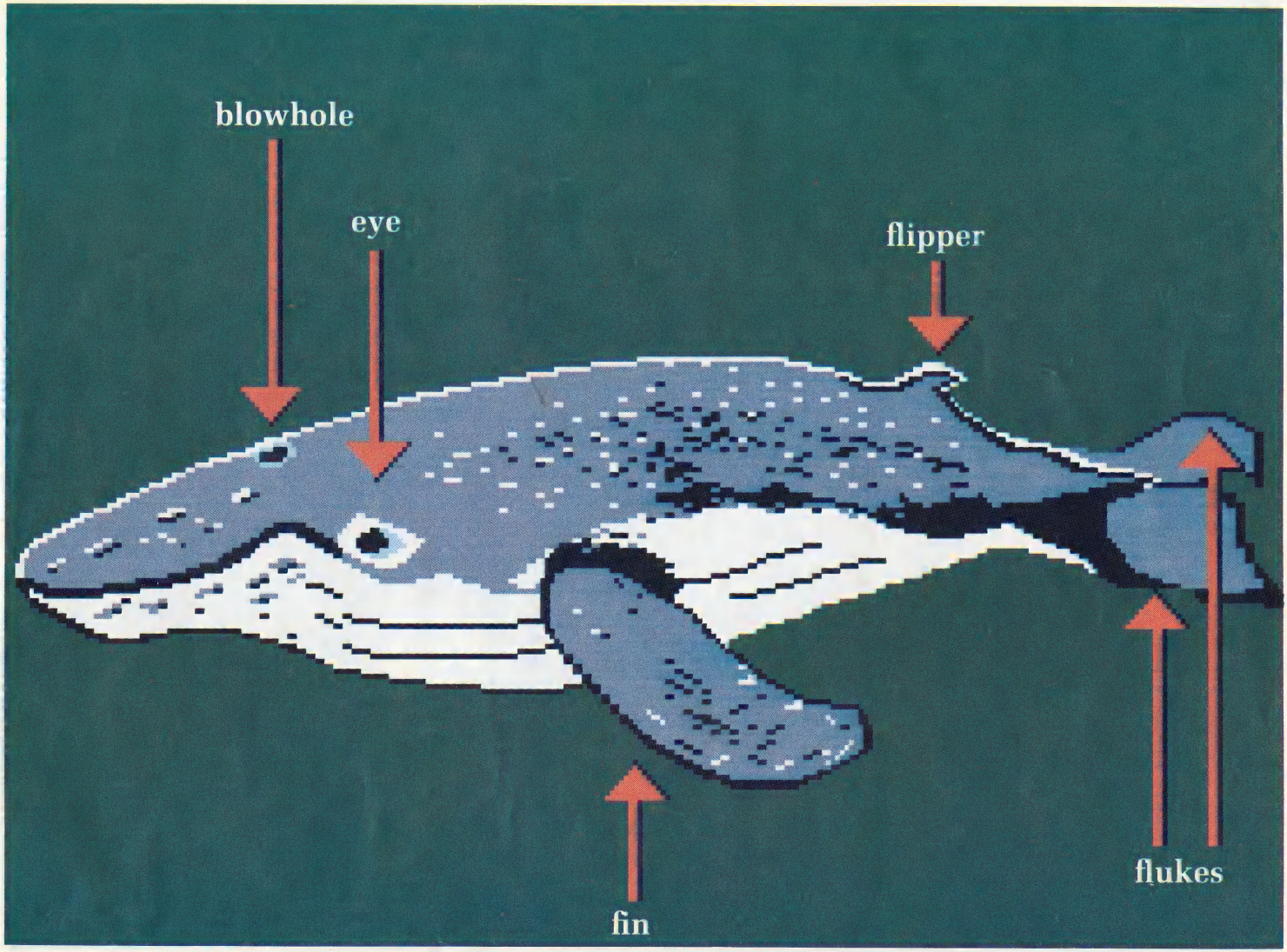
Go to Scene 2

Look at the parts of the whale. Move the skin away. What do you find? Move the blubber. Now, move the muscles. What's left?

Whales look like fish, but they're really sea mammals. Elephants, dogs, and people are mammals too, but they live on land. All mammals need to stay warm. All of them feed milk to their young. And they all have lungs, even whales!

A whale breathes air through a blowhole in the top of its head. The mist of air and water we see spraying up is called a blow.

Move the flipper bones away. What do you see moving inside?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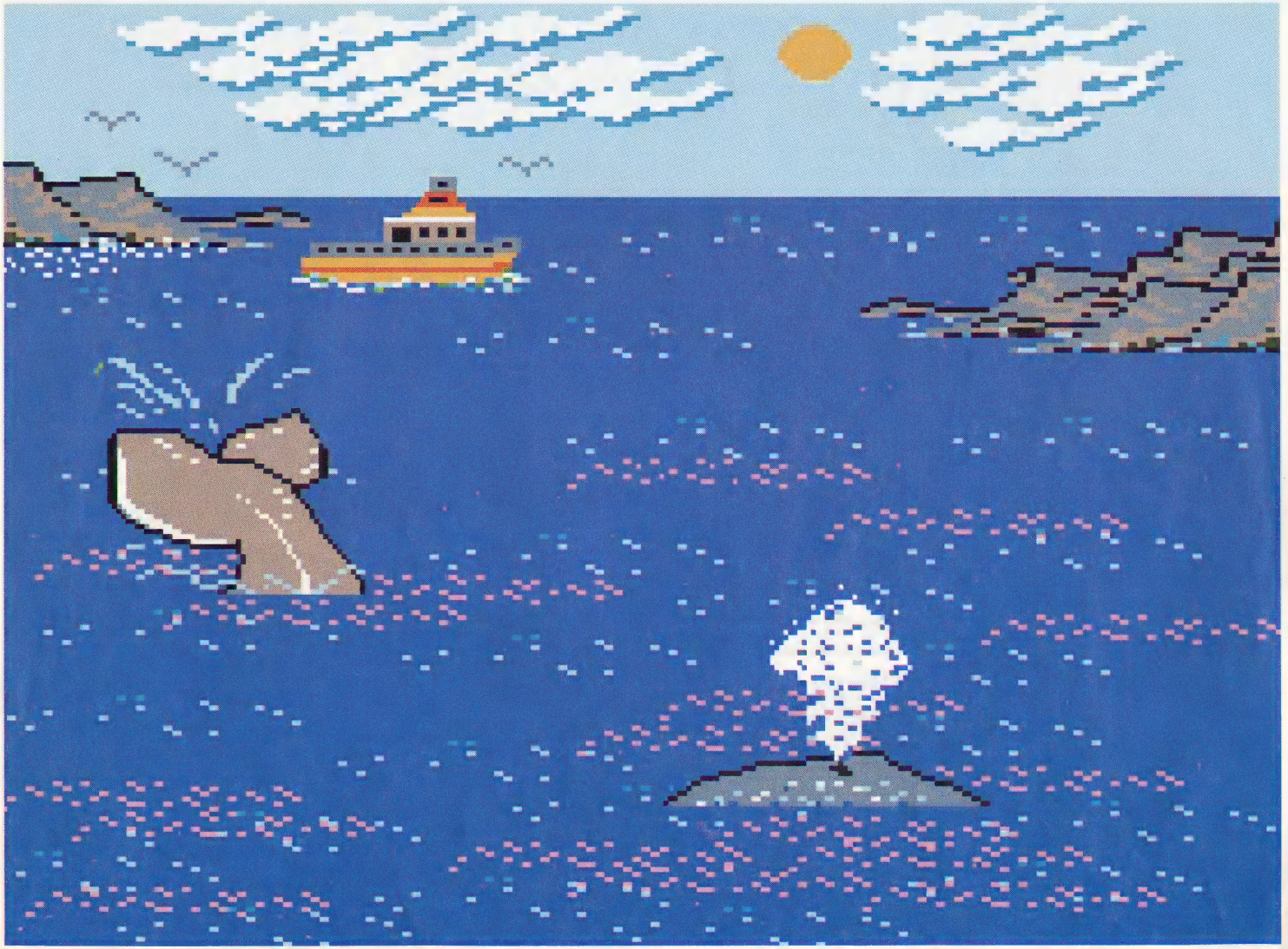


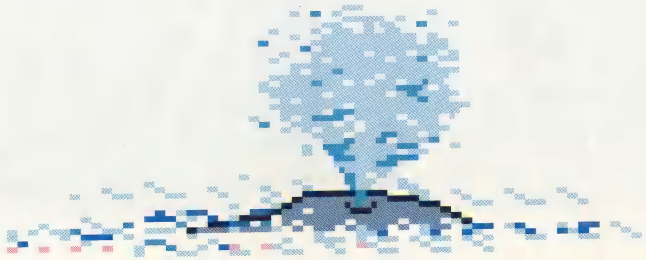
One day, Emily took me out to watch for whales. Our boat chugged out into the ocean. We waited for a long time. Suddenly, a blast of spray rose up from the water.

"There's a blow!" called Emily. "A whale is coming up to breathe. Look! There's another one! Each kind of whale makes a different shaped blow. That grayish whale must be a humpback, because the blow is pear-shaped."

"Watch the whales come up, breathe a few times, and then dive down deep. As they dive, they flip their tails out. Diving deep is called sounding. When a humpback dives, it can stay under water without breathing for up to 20 minutes."

Go to Scene 3

Watch the whales blow. Match the blows to the ones in the back of your book. Use the word menu to name the whales you see here. Click on the humpback, and drop it down to see it sound.



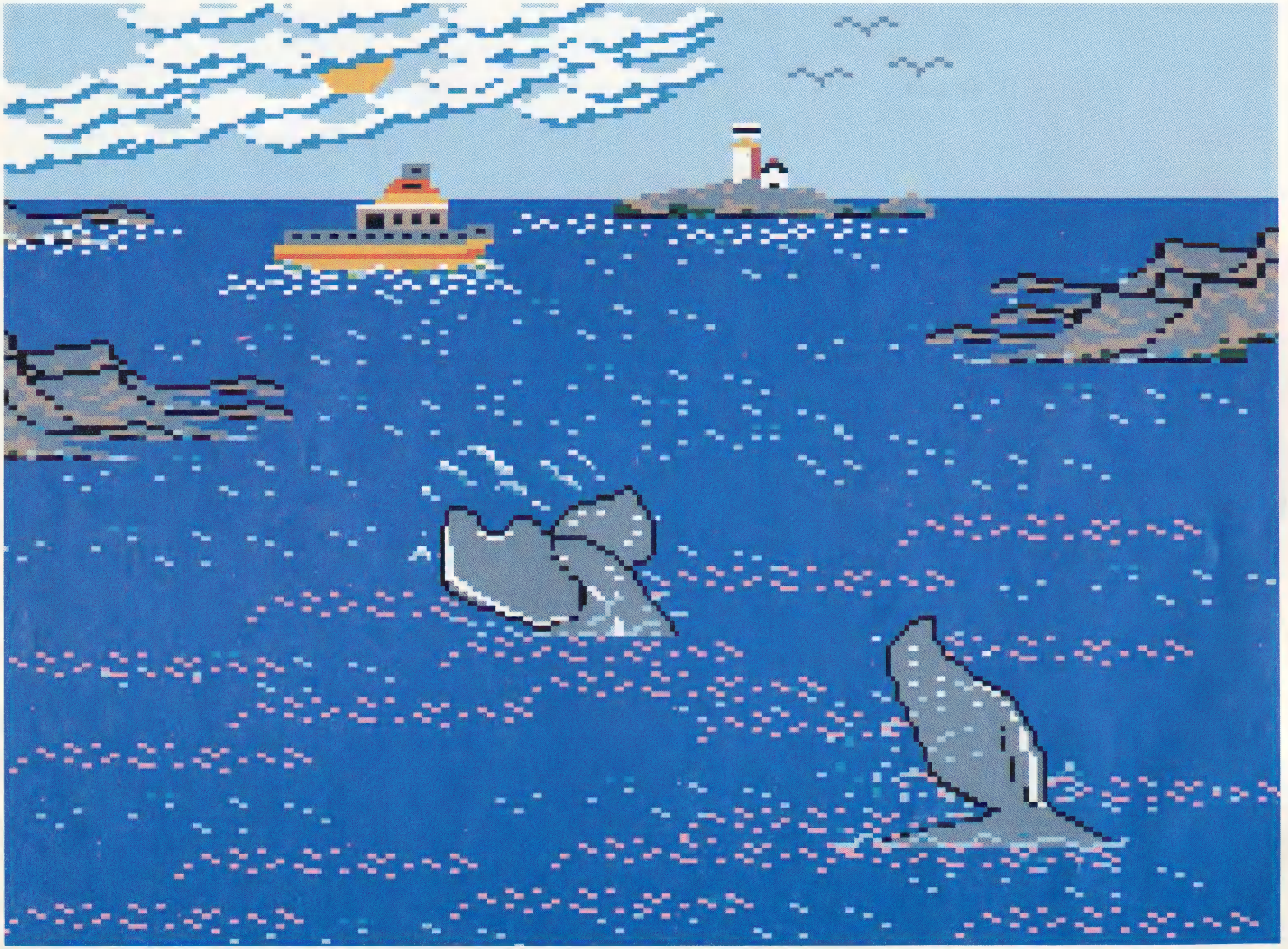
"Would a humpback ever eat a person?" I asked.

"No," said Emily. "Humpbacks are gentle. They do not eat people. They only eat very little things, like small fish, tiny plants, eels, and shrimp. We call this mix of foods krill."

"Some whales have teeth, but the humpback has baleen instead. The baleen looks like a thick brush. The humpback opens its mouth wide and takes in a big mouthful of water and krill. Then it closes its mouth and pushes the water out with its strong throat muscles and tongue. The whale's food gets caught in the baleen. Then the humpback swallows its catch."

Go to Scene 4

Bring the humpback up to the krill in the water and click. Watch it fill its mouth with water and food. Click on the krill to see its shapes and sizes. The big humpback has to eat a lot of krill to make a meal!



"Look!" shouted Emily. "A whale is waving its flipper in the air! That's called flippering. Some people think the whales are trying to signal to each other. Others think the whales catch the wind and sail, just for fun."

Go to Scene 5

Move a whale from side to side to see it sail. Why do you think the whale is flippering? Move it up, then click. Now, what does the whale do?

The flipper went back under water. Then we saw a humpback's huge tail rise up into the air and slap the water. Emily said the whale was lob-tailing.

"Look at that tail," said Emily. "Can you see the jagged edge on its fluke? I've seen that tail out here many times. It belongs to a whale that I call Salty."

Go to Scene 6

Look at the two humpback tails. Find the jagged one that belongs to Salty. Move the tails up and then click. How do the tails look different?

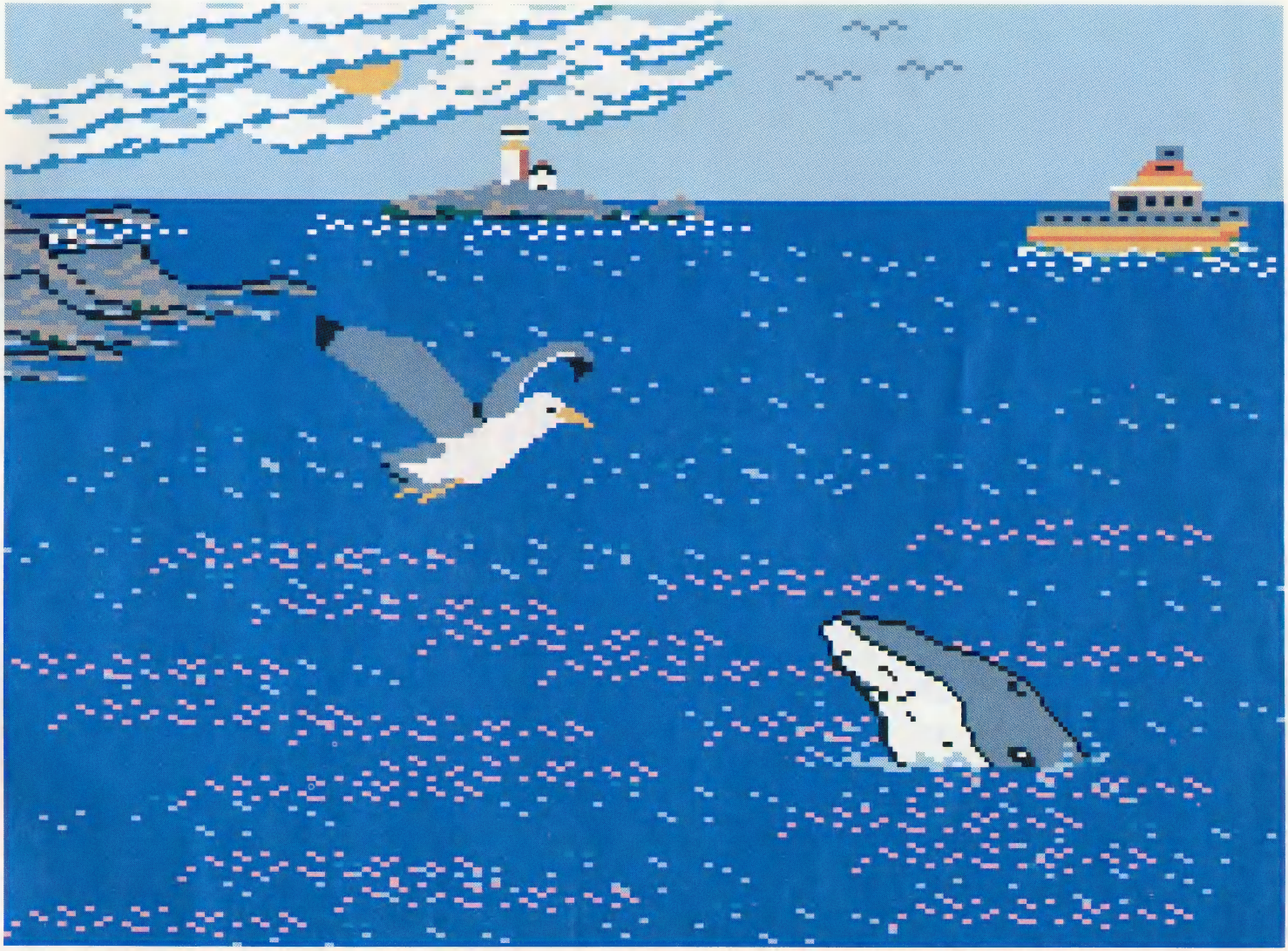
"Hi, Salty!" I yelled, as the tail went back under. Then I saw a whale's head come out of the water. "Hey, that whale is looking at me! I'm whale-watching, and he's people-watching." Emily said that the whale was spy-hopping.

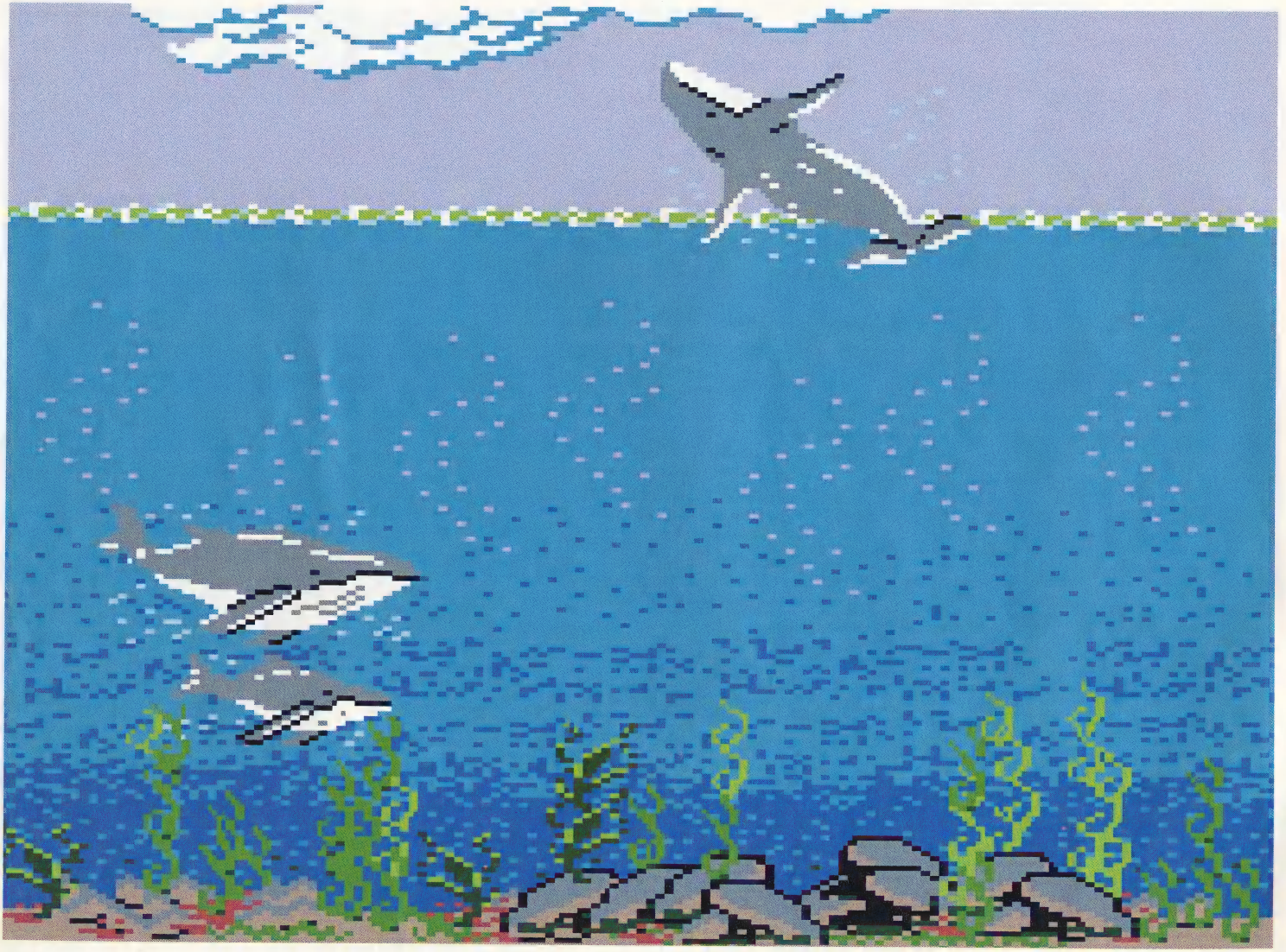
Go to Scene 7

Move the whale up and then click. Do you see its eye? What do you think the whale is looking at?

"Do humpbacks talk to each other?" I asked.

"They don't talk like we do," answered Emily. "But they do make strange and beautiful noises, which can be heard for many miles under water. Some people think they're singing. They seem to learn their songs from each other, like we do."





We didn't see any whales for awhile. Then, I heard a great crash. I looked and saw a humpback jumping all the way out of the water! It really was the biggest animal I'd ever seen. "Watch! It's breaching!" yelled Emily. SPLASH! It landed back in the water.

Go to Scene 8

Watch the whale at the top of the water. Do you see it twist and spin? It is breaching. Make the whale dive deep, then bring it back to the top of the water and click.

In a little while, we saw more humpbacks—a mother with a baby. "A baby whale is called a calf," Emily explained. "The calf is born under water, and the mother helps it swim up right away to get air. She feeds it milk and carefully protects it for almost a year."

Pick up the mother and baby and move them around under water. Do you see how they always stay close together? Move them up, and then click. Watch the calf drink milk from its mother.

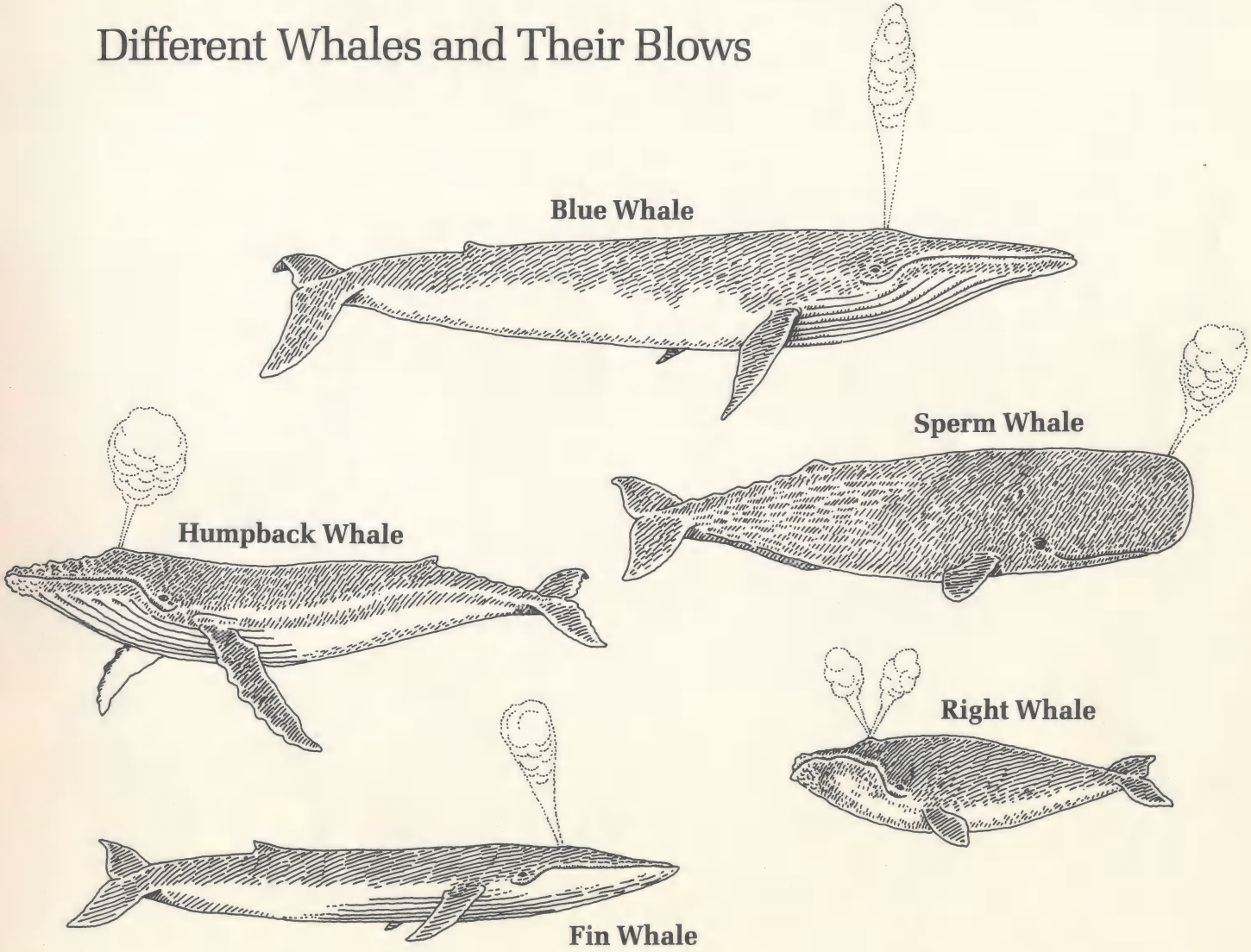
The boat turned and headed toward shore. I thanked Emily. "It was a great day. I love watching whales!"

I hope you'll go on a whale-watch, too. Then you could see whales for yourself. You might even see humpbacks! They're one of the biggest, most exciting animals in the world!

Go to Scene 9

Our whale-watch is over. We leave the whales behind to swim, feed, and play—at home in the sea.

Different Whales and Their Blows



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EXPLORE-A-SCIENCE: WHALES

AUTHOR

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TITLE

guide, 1 prog. disk, 1 stud. disk.

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EXPLORE-A-SCIENCE: WHALES

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Contents: 1 student bklt, 1 teacher's guide, 1 prog. disk, 1 student disk.

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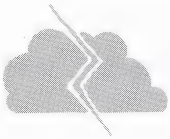
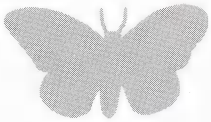
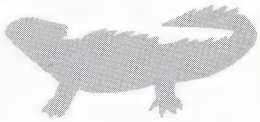


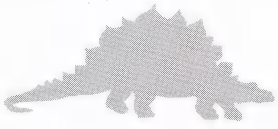


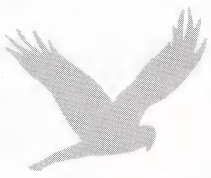


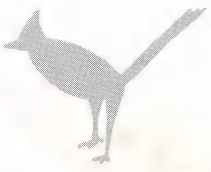
EXPLORE-A-SCIENCE

ANIMAL WATCH
WHALES

TEACHER'S GUIDE







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Note to Teachers

Explore-a-Science is a unique approach to the use of the computer for science education. It has been designed to encourage students to explore and to try things out. The Explore-a-Science programs provide accurate scientific information. They encourage students to ask questions about the world without necessarily providing answers to all of them, though clues to the answers are often available. They are intended as a means of stimulating students to want to know more and to ask questions. Science is a process of asking questions and looking for answers. It is a way of engaging students in a search for more information.

Sometimes during their explorations, students will want to try out things that are unlikely or impossible in the real world. For example, they can put a whale in the sky. This could lead them to ask the question, "Can whales fly?" For many students, the answer to such a question is obvious. For others, the question may indicate either a lack of understanding or heightened curiosity about the way things work in the world. For example, "Why can't whales fly? Why are whales shaped the way they are, compared to birds?" Teachers should be prepared to help students carry their explorations further and to find answers to their questions.

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QUICK START

STARTING UP AND TURNING PAGES

Put the Program Disk into the disk drive and turn on the computer. Directions will appear. Put Side 1 of the Student Disk into the disk drive and click on the Page Turner box. This is the blue box in the upper-right corner of the screen. The number on the Page Turner box tells which page of the story or activity is on the screen. Placing the pointer on the Page Turner box and clicking will advance the story pages in order.

THE POINTER

After booting, the first page of the story will appear. There will be a small white arrow on the screen. This is the "pointer." Almost everything in Explore-a-Science is controlled with this on-screen pointer. To move the pointer, use the keyboard, a mouse, a joystick, or a Koala Pad. The following is a brief description of how to move the pointer and how to "click" using each.

Moving the Pointer	How to Click

THE MENU BAR

To reveal the Menu Bar, move the pointer to the green box in the upper-left corner of the screen and click. The menu choices, in order, are Characters, Objects, Backgrounds, Labels, Disk Functions, and Print. For specific information on Disk Functions or Print, see pages 7-10.

Characters

Move the pointer to the Characters box and click. An animated character will appear beneath the box. Place the pointer on one of the arrows beneath the character and click to see the other characters. To add one of the characters to the scene, place the pointer on top of the character and click. The character can then be moved anywhere in the scene. Click again to drop it.

Objects, Backgrounds, and Labels

lowing is a brief description of how to move the pointer and how to "click" using each.

	Moving the Pointer	How to Click
Mouse:	Move the mouse along a flat surface.	Press the button on the mouse.
Joystick:	Move the handle of the joystick in the desired direction.	Press the fire button.
Koala Pad:	Move a finger across the Koala Pad in the desired direction.	Press one of the buttons.
Keyboard:	Press the arrow keys to slowly move the pointer. For faster movement, press the open-apple key and an arrow key at the same time.	Press the closed-apple key . (On the IIGS, use the OPTION key.)

Try moving some things on the screen. To do this, position the pointer on an object or a character. Click once to pick it up. To move it, follow the same directions as for moving the pointer. Click again to drop it.

The character can then be moved anywhere in the scene. Click again to drop it.

Objects, Backgrounds, and Labels

Add an object or label to the scene by clicking on the Object or Label box in the Menu Bar, and following the same steps described under Characters. To copy the same object into the scene many times, press the SPACE BAR instead of clicking. Any character or object on the screen can be erased by clicking on it and pressing the DELETE key, or by dragging it off the screen and clicking. To choose a different background, click on the Background box in the Menu Bar, then click on the new background.

Saving Your Work

To save any changes to the screen, choose Save in the Disk Functions box of the Menu Bar. Moving to the next scene without saving will cause all work to be lost. Each student should save to his/her own disk. Scenes can be saved under the original page name or a new name. The story or activity sequence is left if a new name is chosen. This means that the student will have to return to the menu to open the next scene every time he/she saves under a new name.

Notes on Opening

The program automatically opens to the first page of the science story. To use the Activities on Side 2 or retrieve other work, choose Open in the Disk Functions box of the Menu Bar. See page 7 for more information.

Objectives

In completing the program, students will be able to

- classify whales with other mammals and describe their similarities.
- label the parts of a whale including blowhole, flipper, fin, flukes, eye, blubber, muscles, lungs, and bones.
- identify different whales by their shapes, sizes, and blows.
- identify and describe the following behaviors associated with humpback whales — blowing, sounding, flippering, lob-tailing, spy-hopping, and breaching.
- classify the humpback as a baleen whale and describe its eating habits.

Introduction

Explore-a-Science is a series of educational programs that allow students to explore the wonders of the scientific world while discovering reading, writing, and their own imaginations. Students can change and rearrange scenes on the screen, add text, and create new scenes which can be saved on a Student Disk or printed and made into books.

Each Explore-a-Science package includes five science readers, a Teacher's Guide, and four disks — the Program Disk, the Student Disk, and two back-up disks. The back-up disks should be kept in a safe place for use in the event of loss or damage to the Program or Student Disks.

The uses of Explore-a-Science are limitless. Following is a basic sequence to guide your use of the program.

- Read the Explore-a-Science readers
- Page through the scenes on the computer screen
- Change and experiment with existing scenes on the computer
- Create and print original books from the scenes

Getting Started

Explore-a-Science runs on an Apple IIe, enhanced (with 128K of memory), IIc, or IIGS computer and one disk drive. A color monitor is recommended. A printer, either color or black-and-white, is optional.

The Program Disk and a copy of the Student Disk for each computer are all that is necessary to run the program. As many copies of the Student Disk as needed can be made using the Apple System Master disk supplied with the computer.

Loading the Program

Insert the Program Disk with the label side up into the disk drive and close the drive door. Turn on the computer and monitor. When the title page of the story appears on the screen and the red light on the disk drive goes off, remove the Program Disk from the drive and insert the Student Disk with side 1 facing up.

Using the Program

Each scene in a story is on a different "page." To advance pages and view all the scenes in a story, refer to **Turning Pages on the Screen** on page 3 of this guide. Characters in a scene can be moved or deleted and new characters and objects can be added/deleted to modify a scene. Labels can be added to identify characters and objects, and text can be inserted to amplify a scene. Also, the background can be changed to create a new scene. Refer to pages 5 - 6 for detailed information on these functions.

To page through the scenes of other stories on the Student Disk, open the story desired (see **Open,** page 7). To exit from any point in the program, first, save on a Student Disk (see **Save,** page 7) any modified or new scene, then turn off the computer and monitor, and remove the disk from the drive.

Moving the Pointer

The pointer, which appears as an arrow on the screen, is used to turn pages, to make selections from the Menu Bar, and to move characters, objects, and labels into a scene or to reposition them within a scene. The pointer can be moved using a mouse, a joystick, a Koala Pad, or the keyboard, as follows:

Mouse: Any movement of the mouse will affect the pointer location. Move the pointer by moving the mouse in the desired direction along a flat surface.

Joystick or **Koala Pad:** Movement of the joystick handle, or a finger across the Koala Pad will move the pointer in a corresponding direction.

Keyboard: Pressing the arrow keys on the keyboard will move the pointer slowly. (The ↑ moves the pointer up, the → moves the pointer to the right, etc.) For faster movement, hold down the apple key and an arrow key at the same time.

To move characters, objects, and labels into or around a scene, position the pointer directly on the selection and click, then move to desired location.

To *click* with the

Mouse: press the button.

Joystick: press the fire button. (If the joystick has two buttons, experiment to see which button is active.)

Koala Pad: press one of the two front buttons.

Keyboard: IIe and IIc: press the apple key.
IIGS: press the **option** key.

Turning Pages on the Screen

Story pages can be turned by using the Page Turner which is the blue box located in the upper-right corner of the screen. There is always a number in the Page Turner box, indicating which story scene is on the screen. Move the pointer to the Page Turner box and click to advance the story pages sequentially. At the end of a story, the title page will reappear, permitting the story to be reread if desired.

Caution: *When changes have been made to a scene, or a new scene has been created, be sure to save the scene (see* **Save**, *page 7) before going on to the next page, otherwise it will be lost.*

Writing in the Scenes

Students can add text to a story by positioning the pointer where the text is to begin and then typing the desired words, pressing RETURN at the end of each line to move to the next line. ***Note:*** RETURN *must be pressed when the text reaches the right-hand edge of the screen.* To edit or delete writing, follow the directions under **Labels** (page 6).

The Menu Bar

The Menu Bar displays the characters, objects, backgrounds, labels, disk functions, and print options available in Explore-a-Science. Move the pointer to the green box in the upper-left corner of the screen and click or press the ESC key to reveal the Menu Bar. When the Menu Bar is visible, the box in the left-hand corner contains a red "X." Click again on the box, or anywhere other than on the Menu Bar, and the Menu Bar will disappear.

Following is a description of the functions represented by the icons on the Menu Bar:

Characters Add animated characters to a scene.

Objects Add objects to a scene.

Backgrounds Change the background of a scene.

Labels Place prewritten words in a scene.

Disk Functions Open stories, save scenes, clear the screen, and access **Set Up** and **Disk Utilities**.

Print Print existing or new scenes in black-and-white or color.

To select any of these functions, move the pointer to the corresponding icon in the Menu Bar and click.

Characters

To add animated characters to a scene, select Characters by clicking on the first box in the Menu Bar. Then, look through the collection of characters by clicking on the ▲ ▼ arrows, located at the bottom of the character box. Once the desired character is displayed, click directly on it and move it into the scene. Click again to drop it in place.

To delete a character, click on it, then press DELETE.

Objects

To add non-animated objects to a scene, select Objects by clicking on the second box in the Menu Bar. Then, look through the collection of objects by clicking on the ▲ ▼ arrows, located at the bottom of the object box. Make a selection, and move or delete objects by following the procedure outlined for characters.
Note: *Some objects are part of the background and cannot be moved or deleted.*

To place multiple copies (up to 200) of an object in a scene, after moving the object to the desired location on the screen, press SPACE, then move the object to the next location and press SPACE again. Continue to reposition the object around the screen, pressing SPACE each time a copy is desired. When the final copy has been placed, click to drop the object from the pointer.

Backgrounds

This option can be used to change the background of an existing scene or create a background for a new scene. Clicking on the third box in the Menu Bar discloses a selection of backgrounds. The background of a scene can be changed, while retaining the existing characters and objects, by positioning the pointer on a new background and clicking. To create an entirely new scene, the screen must first be cleared (see **Clear Screen,** page 8) before selecting a new background.

Labels

Clicking on the fourth box in the Menu Bar presents a list of the basic vocabulary words in the story that can be used as labels for characters and objects. Add labels to a scene in the same way as characters and objects.

To delete or edit labels and text

1. Position the pointer anywhere on the label, or in the line containing text to be changed or deleted, and click.

2. Press DELETE to begin erasing at the last letter of the label or a line of text.

For text only:

3. Continue to press DELETE until the desired text has been deleted.

4. If desired, type new text in blank space created by deletion.

Disk Functions

- **Open** - Loads stories from the disk in the drive.
- **Save** - Saves new scenes or scene changes on the Student Disk. (Be sure a Student Disk is in the drive.)
- **Clear Screen** - Erases scenes from the screen.
- **Setup** and **Disk Utilities** - See **Teacher Utilities**, page 9.

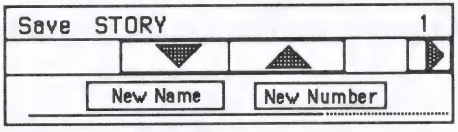
Open

To load a story, click on the fifth box in the Menu Bar: **Disk**, then click on **Open.** Page through the story titles by clicking on either arrow.

Click on the name box when the desired story title appears. Be sure the page number shown at the right of the name box is the page desired. If not, click on the ▶ below the number until the desired number is displayed. Then click on the name box to load that number.

If the story title desired is not displayed, it may be on another disk. Remove the disk from the drive and insert the disk containing the desired story. Click on **Disk** in the Menu Bar and proceed as outlined above.

Save



To save a newly created or modified scene, click on the fifth box in the Menu Bar: **Disk**, then click on **Save**. ***Note:*** *Be sure to insert a Student Disk before attempting to save any scene.*

To save a modified scene, click in the name box to save it under the story name and scene number shown. Answer *Yes* to replace the original scene with the modified scene, or *No* to return to Save box to make another choice. To save a modified scene without replacing the original scene, click on *New Number* and type a number that is higher than the last one in the story, then click on the name box.

If a scene will not save, it may be locked (asterisk next to story name) and must be unlocked before it can be saved (see **Disk Utilities,** page 10).

To save scenes in a newly created story, the story must be given a new name, then each scene in the story must be given a number and be saved individually, at the time it is created. Click on *New Name* and type a name for the story, then click on the name box to save the scene, as shown on the screen, as scene 1. To save subsequent scenes in the same story, after creating each scene, click on *New Number* and type a sequential number, then click on the name box.

The red line under **New Name - New Number** shows how much space is left on the Student Disk. When the red line is close to the right edge of the box, the disk is nearly full. Delete unwanted scenes from the disk to create more space (see **Disk Utilities**, page 10), or save the scene(s) on another Student Disk.

Clear Screen

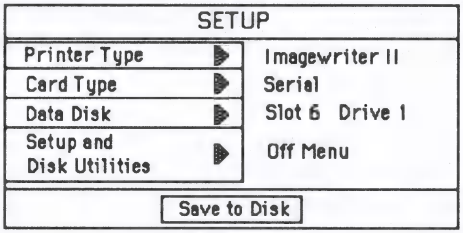
To erase everything on the screen, click on the fifth box in the Menu Bar: **Disk**, then click on **Clear Screen.**

Caution: *If the screen is cleared without first saving a modified or newly created scene, it will be lost.*

Teacher Utilities

The following utilities (**Setup** and **Disk Utilities**) are functions not ordinarily used by students, and for that reason are "hidden" on the menu. To use these functions, click on the fifth box in the Menu Bar: **Disk**, then press and hold CTRL and T .

Setup



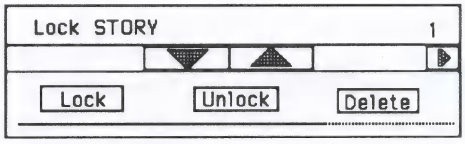
The default settings for Explore-a-Science are

- Apple Imagewriter II printer
- Serial printer card
- One disk drive

To change these settings, click on the fifth box in the Menu Bar: **Disk**, press and hold CTRL and T, then click on **Setup**. With the pointer, select the option to be changed and click on it to automatically change the default.

To add these teacher utilities to the **Disk** menu box, click on **Setup and Disk Utilities** to change the default to **On Menu**, then with the Program Disk in drive 1, click on **Save to Disk.**

Disk Utilities



Any scene can be locked to prevent changes from being made to it. Locked scenes are indicated by an asterisk in the name box. Scenes originally contained on the Program and Student Disks are locked. Locked scenes can be unlocked, thereby permitting changes to be made.

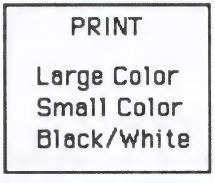
To lock, unlock, or delete a scene, click on the fifth box in the Menu Bar: **Disk**, then press and hold CTRL and T. Click on **Disk Utilities**, and page through the story names in the name box. When the desired story and scene number appears, click on

Lock then click on the name box.

Unlock then click on the name box.

Delete then click on the name box. Only unlocked scenes can be deleted. ***Caution:*** *Deleting a scene removes it permanently from the disk.*

Print



Explore-a-Science scenes can be printed in color in two sizes — full page or half page, or in black-and-white outline form, which students can then color in. Before printing, make sure that the setup is correct for printer/computer combinations in the **Disk Functions-Setup** section. Then check to see that the printer is connected to the computer and that it is turned on.

When the scene to be printed is on the screen, click on the sixth box in the Menu Bar: **Print**, then click on the desired print option.

Explore-a-Science in the Classroom

Overview

There are many approaches to using Explore-a-Science. This section provides ideas and suggestions for using *Animal Watch — Whales* in the classroom. Read through this section and think of ways in which the computer program and science readers might best be used to build your students' skills in reading, writing, and scientific discovery.

Teacher Preparation

Before using *Animal Watch — Whales* in the classroom, review the accompanying science readers, noting the characters, scenes, and objects in the books.

Next, become familiar with how the computer program works — opening and saving scenes on the Student Disk, and printing pages (see pages 7-10 of this guide). The main scenes are found on Side 1 of the Student Disk. Activities are found on Side 2.

Suggested Lessons

The following activities, using the files found on Side 2 of the Student Disk, are suggestions for presenting *Animal Watch — Whales* to students. The activities can be found by opening each file directly. To proceed sequentially through all the activities, open the file called **ACTIVITY SET 0.**

1. Whale Parts

This activity uses the file called **WHALE PARTS.**

Expanding on the scene on side 1 of the disk illustrating humpback anatomy, this activity gives students the opportunity to reinforce their learning. The humpback appears on the screen with the parts labels in the bottom left corner. Students are asked to match the correct labels to the parts of the whale.

The skin layer of the whale can be picked up to reveal the skeleton underneath. Blubber and muscle parts are available in the Objects menu, and all parts labels are available in the Labels menu. Students can then start at the skeleton and build a complete whale.

Students could be asked to discuss the purposes of the various whale parts. What other creatures have similar parts? What different parts of other animals serve similar purposes? (Human skin, animal fur for warmth, legs for motion, etc.) How would life be different for the whale if it did/did not have one of those parts?

2. How Big Is a Whale?

This activity uses the file called **WHALE SIZE.**

Not all whales are huge — some are very small. The many kinds of whales grow to various sizes. This activity illustrates some of the various whales in proportion to each other. Students can get an idea of size in several ways.

- They can pick up each whale, measure it in the box in the lower right corner, then type in the approximate size of the whale.

- They can pick up one whale and place it on top of another kind of whale to compare sizes. They can press [SPACE] to duplicate a character and see, for example, how many dolphins would fit end-to-end next to a blue whale. They can do the same using a school bus, or any shape and size that is familiar to them.

Students could also be asked to suggest other things that might be compared in size to a whale, such as a football stadium, a supermarket, a car, etc. They could be asked to speculate as to how much a whale might weigh and to make weight comparisons.

3. Whale Tails

This activity uses the file called **WHALE TAILS**.

This story discusses how whale tails can be used to distinguish one whale from another, just as human features distinguish one person from another. A close-up of Salty's tail is shown and described. Students are asked to note the differences between the whale tails, to identify the second whale, and to write a description of its tail.

The distinguishing features on whale tails occur in many ways. Some markings are actually barnacles that are attached to the skin. Some tail notches are formed prior to birth. Some scarring occurs from injuries. Students could speculate as to what may have caused Salty's and the other whales' tails to look they way they do.

4. Which Whale Is Which?

This activity uses the file called **WHICH WHALE**.

There are 76 different types of whales, all unique in size, shape, and color. The student book illustrates five of these whales. Students are asked to identify them, referring to the back of their book if necessary. The five whales are pictured on the first screen, and students can identify them by the differences in shape and coloring. Screen 2 shows the blows of the five whales. Students are asked to identify them by their distinctive blows. Students can also click on each of the blows to see a picture of the whale. In each case, they can be encouraged to discuss how the whales look different or similar. (Is the blow high, wide, slanted, etc.? Is the whale black, grey, white, or brown? Is it fat or lean?)

5. **Whale Tales**

This activity uses the file called **WHALE TALES**.

There are many things we do not know about whales — how they live, why they behave as they do. This activity offers students an opportunity to speculate about these fascinating creatures. Three creative writing situations (disk scenes with starting text) are set up to encourage the use of new vocabulary introduced with the program, and to provide a springboard for innovative thinking. Students use the story starters as the first line in a story, dialogue, or other writing form. Key words are available in the Labels menu, and a white background is available to use as an additional writing page. Characters and objects are also available in the menus for the students' use in expanding on the story images.

Additional Activities

The following are additional activities you may wish to use with your students.

- **Classification**

Begin with a discussion of the streamlined shape of a whale's body. Have students create a large (or a life-sized) poster of a humpback whale. Compare a whale's shape to the shape of a human, elephant, wolf, and bird. How are the bodies of each suited to their environment? Create posters of these other animals and label their specialized parts. Label the wolf as having fur for warmth, sharp teeth for capturing and eating its prey, and strong legs for running. Discuss the traits of mammals and draw parallels between groups.

On another poster, have students create a chart of several other whales, dividing them into baleen and toothed whales, large and small. Have students label a map with these whales showing where each can be found.

- **Anatomy**

  Have students draw and label the parts of a whale, beginning with an outside view. On consecutive sheets, have them draw and label each anatomical layer. Have them recognize that blubber makes up a large portion of the whale's body. Introduce the history of whaling, its use of blubber, and its threat to whale populations. Show on two maps a representation of the decline in humpback numbers over the last 100 years. Explain how certain species of animals are now protected under the law in order to prevent extinction.

  Compare whale skeletons to those of humans, fish, and elephants. Discuss similarities and differences. Examine the skeleton of a toothed whale and compare it to a baleen whale. How do their stomachs differ? How do their throats differ? How do their mouths differ?

- **Behaviors**

  Have students create a story about a humpback whale (or whales) based on the behaviors studied — sounding, blowing, flippering, lob-tailing, spy-hopping, breaching, feeding, and caring for their young. Students can use the computer graphics or draw pictures themselves.

  Have some students act out their story in class. Other students can describe what is happening and discuss why. For example, one student might say "Oh, I'm so itchy!" and then jump up and down. Other students can explain that the whale is breaching in order to remove barnacles from its skin. A game of charades can be set up by isolating whale behaviors and writing each on a slip of paper. Two or three students can act out each behavior while the rest of the class guesses what is happening.

- **Food**

  Have students discuss various elements of a whale's feeding grounds. Using cardboard boxes, have students create a diorama containing several of these elements. Some students may want to focus on the individual elements of krill. Others may want to show the whales in one of their feeding

positions. Humpbacks sometimes create "bubble nets" to trap small fish. One whale may exhale a large bubble underneath a school of fish, then swim straight up with its mouth open while the fish are startled by the bubble. Sometimes several whales work together to form a bubble net. The whales swim in spirals around a school of fish, letting out air bubbles while one whale swims up the center to catch the fish. The whales take turns feeding in this way.

On a map of the world, show students where humpbacks can be found (all over the world). Explain that whales migrate north in summer to feeding grounds and south in winter to breeding and calving grounds. Although they do eat in winter, they do most of their feeding beforehand in preparation for the winter months.

Trouble-Shooting Guide

Problem	Possible Causes	Solutions
Program Disk will not load	Program Disk not in drive, or in wrong drive. Disk-drive door open. Disk drive improperly connected to computer. Disk inserted upside down. Computer does not have enough memory. 80-column card does not have Hi-resolution connector.	Program Disk must be in drive 1. Close disk-drive door. Check computer manual for instructions. Insert label-side up. 128K of memory required. Obtain Hi-res connector from computer dealer.
Unable to Open another story	Program Disk in drive.	Remove Program Disk and place Student Disk in drive 1.
Unable to Save scene	Scene is locked. A scene with the same name and number already exists on disk. Student Disk not in correct drive. Disk has a write-protect tab. There is no room left on the disk. Student Disk does not have same story title as Program Disk used to load program.	Unlock (see page 10). Give scene new name and new number. Student Disk must be in drive 1. Remove tab to expose notch on disk. Delete unwanted scenes, or use another Student Disk. Insert Student Disk with same title as Program Disk being used.
Error messages	Too many objects (about 200), or text letters (about 750), or characters (over 11) in the scene. Disk drive door open.	Delete some objects, text, or characters (see pages 4-6). Close disk-drive door.
Unable to add new characters, objects, or labels	Too many characters, objects, or labels in the scene (see "Error messages"). Pointer is not directly on the character, object, or label when clicking.	Delete some objects, text, or characters (see pages 4-6). Position pointer on top of character, object, or label, then click.

Trouble-Shooting Guide

Problem	Possible Causes	Solutions
Characters will not animate	Too many characters and objects in the scene (see above). Character behind another character (only the one on top will move).	Delete some characters, or objects (see page 5). Separate characters from each other.
Unable to print, or prints incorrectly	No printer connected. Printer not connected properly. Paper not inserted correctly. Printer Select button off.	Connect printer. See computer manual. Paper must be centered on platen. Depress Select button.
Unable to move pointer	Mouse, joystick, or Koala Pad incorrectly plugged in, or plugged in after booting.	Refer to computer manual; Turn off computer and reconnect.
Page Turner won't respond	Screen has been cleared. One-page story.	Story must be re-opened.
Pointer has disappeared	Pointer has been moved off the screen (shows as a black line on the border).	Move back onto screen until arrow is visible.
Unable to Save Setup	Program Disk has write-protect tab. Program Disk not in drive, or in wrong drive	Remove tab to expose notch on disk. Program Disk must be in drive 1.
Pointer and icons have disappeared	Computer in print mode. Print selected without first connecting the printer.	Icons, pointer will return when print complete. Check printer connections and turn printer on before attempting to print.

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